# 4th International Conference of Engineering Against Failure


**24-26 June 2015**
**Skiathos, GREECE**

**Conference Chairmen**
Prof. Sp. Pantelakis – University of Patras, Greece
Prof. W. Bleck – RWTH Aachen, Germany

**Organized by**

**Laboratory of Technology & Strength of Materials, University of Patras**

**Hellenic Metallurgical Society**

**Under the auspices of**

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# Preliminary Conference Program

**TUESDAY, June 23, 2015**

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| 18:00 pm – 20:00 pm | Registration |

**WEDNESDAY, June 24, 2015**

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| 9:00 am – 17:00 pm | Registration | | |
| 09:30 am – 10:00 am | Opening Ceremony – Welcome by the Chairmen of the Conference | | |
| **10:00 am - 10:30 am** | **Keynote Lecture: Prof. W. Bleck,** Development of damage tolerant steels | | |
| **10:30 am - 11:00 am** | **Keynote Lecture: Prof. F. Berto,** Recent developments of the local strain energy density for the fracture and fatigue assessment of notched components (*In memory of Prof. Paolo Lazzarin*) | | |
| **11:00 am - 12:40 pm** | **SESSION 1 (LALARIA)**<br>**Materials Mechanics & Structural Integrity**<br>(Chairman: G. Savaidis) | **SESSION 2 (KEHRIA)**<br>**Characterization of failure (I)**<br>(Chairman: H. Atapek) | **SESSION 3 (MARATHA)**<br>**Control of rolling contact fatigue in rails**<br>(Chairman: G. Haidemenopoulos) |
| 11:00 am – 11:20 am | **1.1** Materials mechanics based explanations of fatigue load sequence effects<br><br>*Michael Vormwald* | **2.1** Physical and Mechanical Properties of Rubber Compounds Reinforced by Carbon Fibers Sized with Different Emulsion Agents<br>*A. Alkan, M. Zeren, S. Polat* | **3.1** Surface cracks detection in ferromagnetic specimens using GMR sensors<br><br>*M. Pissas , V. Antonakak, I. Kaliakatsou-Papakosta, E. Manios* |
| 11:20 am – 11:40 pm | **1.2** Optimized leaf spring design of high-performance front leaf springs of trucks<br><br>*G.Savaidis, M. Malikoutsakis, A.Savaidis, Chr.Ertelt, F. Schwaiger* | **2.2** Influence of Doping of Metal Coatings on PEEK to Tribological Behaviour<br><br>*Serap Gumus, Seyda Polat, Juergen Lackner, Wolfgang Waldhauser* | **3.2** Mechanical Performance of UIC60 Grade 900A Rail Steel<br><br>*P. Christodoulou, Al. Kermanidis* |

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| 11:40 pm – 12:00 pm | **1.3** Finite element analysis and improved design of large scale belt conveyor drums<br><br>*A. Mihailidis, G. Savaidis, E. Bouras, E. Athanasopoulos, N. Ganavaras, I. Topalidis, D. Karageorgos, I. Rampidis* | **2.3** Influence of volcanic ash filler content on mechanical properties of polyphenylene sulfide composites<br><br>*Mustafa Ozgur Bora, Onur Coban, Sinan Fidan, Tamer Sinmazcelik* | **3.3** Metallurgical study of initiation and propagation of RCF cracks in rails<br><br>*G.N. Haidemenopoulos, P. I. Sarafoglou, P. Christopoulos, A.D. Zervaki* |
| 12:00 pm – 12:20 pm | **1.4** Short-crack growth in a steel 42CoMo4<br><br>*Heinz Thomas Beier* | **2.4** Thermal and Dynamic Mechanical Properties of Volcanic Ash Reinforced Polyphenylene Sulfide Composites<br><br>*Onur Coban, Mustafa Bora, Sinan Fidan, Tamer Sınmazcelik* | **3.4** Crack deflection of a fatigue crack initiated by rolling contact fatigue<br><br>*Antonios Giannakopoulos, Konstantinos Baxevanakis* |
| 12:20 pm – 12:40 pm | **1.5** Mean Stress Influence on Endurance of Very High Strength Steels<br><br>*Andreas Kleemann, Joachim Bergmann, Rayk Thumser, S. Kleemann* | **2.5** Micro-Computed Tomography Characterization of Volcanic Ash Particles Used As Reinforcement in Polyphenylene sulfide composites<br><br>*Sinan Fidan, Onur Coban, Ozgur Bora, Tamer Sinmazcelik* | **3.5** Fracture and fatigue analysis of 3D cracks that appear in railway steels<br><br>*Antonios Giannakopoulos, Konstantinos Baxevanakis* |
| 12:40 pm – 13:40 pm | Lunch Break | | |
| **13:45 pm – 14:15 pm** | **Keynote Lecture: Prof. W. Ostachowicz,** Potentials and limitations in modern SHM and NDT technologies | | |
| **14:20 pm – 15:40 pm** | **SESSION 4 (LALARIA)**<br>**Mechanical behavior and failure modes of composite materials, joints and fibres (I)**<br>(Chairman: C. Charitidis) | **SESSION 5 (KEHRIA)**<br>**Structural materials: nanoscale modifiers in advanced composites (I)**<br>**(Chairwoman: L. Guadagno)** | **SESSION 6 (MARATHA)**<br>**Machine elements: Tribology and mechatronic design**<br>**(Chairmen: Chr. Papadopoulos & P. Nikolakopoulos)** |
| 14:20 pm – 14:40 pm | **4.1** Evaluation of corrosion properties of dissimilar friction stir welded AA5083-H111 and AA6082-T6 reinforced with nanoadditives<br><br>*I.A Kartsonakis, D. Dragatogiannis, E. Koumoulos, A. Karantonis, C.A Charitidis* | **5.1** Mechanical Behaviour of a Carbon Fabric-Reinforced Epoxy Composite with Carbon Nanotubes<br><br>*M. Kadlec, R. Hron, L. Guadagno* | **6.1** Dynamics of Smart Rotating Machines<br><br>*O. Orsalia Christidi-Lampasefski, I. Tzifas, P. Nikolakopoulos, Chr. Papadopoulos* |

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| 14:40 pm – 15:00 pm | **4.2** Evaluation of core-shell Mg-Al-$NO_3$ layered double hydroxides for chlorides entrapment<br><br>*I.A Kartsonakis, E.K. Karaxi, V. Chaleplis, C.A Charitidis* | **5.2** Assessing the Compression after Impact behavior of innovative multifunctional composites<br><br>*P. Polydoropoulou, Chr. Katsiropoulos, Sp. G. Pantelakis* | **6.2** A Fuzzy Control Model for Bearingless Motors<br><br>*Th. Psonis, Ep. Mitronikas, P. Nikolakopoulos* |
| 15:00 pm – 15:20 pm | **4.3** Bamboo based Carbon Fibres- A natural source for enhancing mechanical strength of cement composites<br><br>*Pravin V. Jagdale, Sajjad Ahmad, Rao Arsalan Khushnood, Jean Marc Tulliani, Giuseppe Andrea Ferro, Alberto Tagliaferro* | **5.3** Finite Element Analysis of Electrical Properties of Carbon Nanotube-Filled Polymers<br><br>*A. Manta, K. Tserpes* | **6.3** A piston ring pack tribological design for internal combustion engines<br><br>*A. Zavos, P. Nikolakopoulos* |
| 15:20 pm – 15:40 pm | **4.4** Mechanical behaviour of carbon based structures synthesized by CVD<br><br>*D.K. Perivoliotis, M.A. Koklioti, E.P. Koumoulos, C.A. Charitidis* | | **6.4** Thermal-hydrodynamic behaviour of coated pivoted pad thrust bearings<br><br>*K.Katsaros, D.Bompos, P. Nikolakopoulos* |
| 15:40 pm – 16:00 pm | Coffee Break | | |
| **16:00 pm - 17:40 pm** | **SESSION 7 (LALARIA)**<br>**Mechanical behavior and failure modes of composite materials, joints and fibres (II)**<br>(Chairman: C. Charitidis) | **SESSION 8 (KEHRIA)**<br>**Structural materials: nanoscale modifiers in advanced composites (II)**<br>**(Chairwoman: L. Guadagno)** | **SESSION 9 (MARATHA)**<br>**Dissimilar material joining**<br>**(Chairmen: G. Gibson & G. Kotsikos)** |
| 16:00 pm – 16:20 pm | **7.1** Assessment of the carbon fibre/matrix interfacial properties by push-out tests<br><br>*S. Corujeira-Gallo, X. Li, H. Dong* | **8.1** Effect of carbon nanotubes on adhesive properties of structural materials<br><br>*U. Vietri, L. Vertuccio, M. Raimondo, S. Russo, L. Guadagno* | **9.1** High cycle fatigue behaviour of structural adhesive joints<br><br>*A. Wulf, M. Brede, C. Nagel, O. Hesebeck* |

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| 16:20 pm – 16:40 pm | **7.2** Synthesis of nanostructured silicon carbide from pine wood and hydrate cellulose<br><br>*L. Vyshniakov, K. Vyshniakov, L. Pereselentseva* | **8.2** Epoxy Mixture at Low Moisture Content for Aeronautic Application<br><br>*L. Vertuccio, V. Vittoria, C. Naddeo, M. Raimondo, S. Russo, L. Guadagno* | **9.2** Functionally graded bond-lines for metal/composite joints<br><br>*A. Chiminelli , R. Breto, E. Duvivier, M. Á. Jiménez* |
| 16:40 pm – 17:00 pm | **7.3** Determination of the single carbon fiber mechanical properties<br><br>*V. Tykhyy, O. Potapov, O. Samusenko, O. Karpicova, D. Dragatogiannis, C. Charitidis* | **8.3** The role of filler aspect ratio on electrical properties of carbon-based polymer composites<br><br>*B. De Vivo, L. Guadagno, P. Lamberti, M. Raimondo, G. Spinelli, V. Tucci* | **9.3** Mechanical performance of prefabricated hybrid joints<br><br>*S. Tsampas, V. Churchill, SC E. Juin, D. Mattsson, D. Ramantani,* |
| 17:00 pm – 17:20 pm | **7.4** Carbon Fibre surface modification by Atmospheric Plasma treatment and its Raman peak evaluation<br><br>*P. Jagdale, I. Cannavaro, P. Mandracci, H. Dbouk, S. Salimpour, A. Tagliaferro* | **8.4** Effect of multiwall carbon nanotubes and their combination with silicone and phosphorous compounds to enhance epoxy electrical, thermal and fire properties<br><br>*L. Bonnaud, L. Dumas, O. Murariu, M. Raimondo, S. Chirico, L. Guadagno, P. Longo, A.M. Mariconda, Ph. Dubois* | **9.4** NDT of dissimilar joints using ultrasonic and X-ray CT methods<br><br>*E. Jasiūnienė , L.Mažeika, E.Žukauskas, V.Samaitis, V. Cicėnas* |
| 17:20 pm – 17:40 pm | **7.5** Assessment of the Dispersion of Cellulose Nanocrystals (CNCs) in Melt Compounded Polyethylene (PE)<br><br>*A. Lewandowska, S. Eichhorn* | | **9.5** Failure Mode and Strength of FRP/Steel Joints Bonded with MWCNT dispersed epoxy Adhesive<br><br>*M. Konstantakopoulou, G. Kotsikos* |
| 17:40 pm – 18:00 pm | **7.6** A finite element method to simulate the matrix cracking/splitting in composite plates under four point bending<br><br>*Y. Shi, C. Soutis* | | **9.6** Development of piezoelectric strain sensors embedded in bonded dissimilar material joints<br><br>*A. Deligianni, J. Hale, G. Kotsikos* |
| 18:00 pm | End of Day 1 | | |
| 19:30 pm | Welcome reception | | |

**THURSDAY, June 25, 2015**

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| 9:00 am - 16:00 pm | Registration | | |
| 9:00 am - 9:30 am | **Keynote Lecture: Dr. M. Hofmann,** Proposal for critical materials for innovative products - Challenges to materials science and engineering | | |
| 9:30 am - 10:00 am | **Keynote Lecture: Prof. C. Soutis,** Modern composites in aerospace: engineering against failure | | |
| 10:00 am - 10:30 am | Coffee Break | | |
| 10:30 am - 12:30 am | **SESSION 10 (LALARIA)**<br>**Design of advanced high strength steels: Experiments and simulations**<br>(Chairmen: W. Bleck & G. Haidemenopoulos) | **SESSION 11 (KEHRIA)**<br>**Cold spray against failure**<br>(Chairman: M. Guagliano) | **SESSION 12 (MARATHA)**<br>**Surface degradation (corrosion-wear-erosion) of metals and composites**<br>(Chairwoman: Ag. Lekatou) |
| 10:30 am - 10:50 am | **10.1** Fatigue failure: An analysis of microstructure influence<br><br>*M. Sharaf, S. Münstermann, P. Kucharczyk, N. Vajragupta, A. Hartmaier, W. Bleck* | **11.1** Fatigue behavior of Al Alloy cold sprayed notched specimens<br><br>*A. Moridi, M. Hassani, K. Petrakova, S. Vezzù, M Guagliano* | **12.1** Erosive wear behavior of CNTs modified epoxies and CFRPs<br><br>*N.M. Barkoula, T. Papadopoulos, G. Gkikas, A.S. Paipetis* |
| 10:50 am - 11:10 am | **10.2** Experimental and numerical study on the effect of Aluminium alloying in high Manganese steels focusing hydrogen embrittlement<br><br>*X. Guo, M. Madivala, U. Prahl* | **11.2** A preliminary study on the design of C(T) Specimen for Determination of Interfacial Cohesive Properties<br><br>*K. Petrakova, A. Moridi, M Guagliano* | **12.2** Effect of Co content on the corrosion resistance of rapidly solidified Al-Co alloys<br><br>*A.K. Sfikas, A. Lekatou, Ch. Petsa, A.E. Karantzalis* |
| 11:10 am - 11:30 am | **10.3** Investigation on kappa phase formation in Fe-Mn-Al-C austenitic steels by ab initio calculations and in situ synchrotron X-ray diffraction<br><br>*W. Song, W. Bleck* | **11.3** Influence of processing temperature on the microstructure and mechanical properties of cold sprayed Al 2024 coatings<br><br>*P. Sirvent, M. Garrido, A. Rico, C. Munez, P. Poza, S. Rech, S. Vezzu* | **12.3** Chemical etching of aluminum as a pretreatment improving the anti-corrosive properties of certain organic compounds<br><br>*S. Theohari, A. Kanta, I. Tsangaraki-Kaplanoglou* |
| 11:30 am - 11:50 am | **10.4** Fatigue performance of Al-containing low-alloy TRIP steels<br><br>*P. Christodoulou, Al. Kermanidis* | **11.4** Recent Advances of Cold Sprayed Al alloy coatings for applications in aviation repairs<br>*S. Rech, S. Vezzù, E. Vedelago, A. Moridi, S.M. H. Gangaraj, M. Guagliano, P. Poza, D. D. Martín, M. S. Álvarez* | **12.4** Nano modified epoxy resins for carbon fiber reinforced composites applied in aerospace aluminum sheet patched repairs<br><br>*D. Baltzis, A. Lekatou, A.S. Paipetis* |

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| 11:50 am - 12:10pm | **10.5** Modeling the bainite transformation in advanced high-strength steels under paraequilibrium driving forces<br><br>*H. Kamoutsi, A.I. Katsamas, G.N. Haidemenopoulos* | **11.5** Elastic Isotropy of Cold Sprayed Coatings<br><br>*J. Cizek, H. Seiner, R. Huang, M. Landa, I. Dlouhy* | **12.5** Electrochemical and mechanical study of steel coupled with nano-reinfored adhesives<br><br>*S. Orfanidis, D. Baltzis, A. Lekatou, A. S. Paipetis* |
| 12:10 pm - 12:30pm | **10.6** Simulation of austenite formation and elemental partitioning during intercritical annealing of a medium-Mn steel<br>*H. Kamoutsi, E. Gioti, G.N Haidemenopoulos, Zhihui Cai, Hua Ding* | **11.6** Effect of Powder Feedstock Properties on Ti-6Al-4V cold sprayed coatings characteristics<br><br>*R. Barnett, T. Marrocco, P. McNutt, A. Cazacu, H. Lovelock* | **12.6** Investigation of Cold Water Pitting Corrosion Failure of Deoxidized High Phosphorus (DHP) Copper Tube: A Case Study<br><br>*G. Pantazopoulos, A. Vazdirvanidis, A. Rikos, D. Skarmoutsos* |
| 12:30pm - 13:30pm | Lunch | | |
| 13:30 pm - 14:00 pm | **Keynote Lecture: Prof. L. Susmel,** On the use of the Theory of Critical Distances to estimate the high-cycle fatigue strength of notched plain concrete | | |
| 14:00 pm - 15:40 pm | **SESSION 13 (LALARIA)**<br>**Impact response of advanced metallic & composite structures**<br>(Chairmen: G. Labeas & Ath. Dafnis) | **SESSION 14 (KEHRIA)**<br>**Non Destructive Testing techniques**<br>(Chairman: W. Ostachowicz) | **SESSION 15 (MARATHA)**<br>**Weathering of Composite Structures**<br>(Chairman: D. Mouzakis) |
| 14:00 am - 14:20 pm | **13.1** Interlaminar stresses calculation of composite structures under impact loading by Stacked Solid Shell finite element modelling<br><br>*K. Fotopoulos, G. Lampeas* | **14.1** Anatomy of Excess Noise Sources and Electromagnetic Emission During Loading of Fibre Reinforced Composites<br><br>*R. Macku, P. Koktavy, T. Trcka* | **15.1** Stochastic and Acoustic Emission Detection of Accelerated Aging Related Damage in Carbon Fiber Reinforced Composites<br><br>*D. E. Mouzakis, D. G. Dimogianopoulos, S. Zaoutsos* |
| 14:20 pm - 14:40 pm | **13.2** Experimental and Numerical Investigation of AS4/8552 Interlaminar Shear Strength Under Impact Loading Conditions<br><br>*N. Perogamvros, G. Lampeas* | **14.2** Terahertz spectroscopy for damage assessment in composite materials<br><br>*S. Opoka, T. Wandowski, P. Malinowski, W. Ostachowicz* | **15.2** Experimental and Numerical Investigation of Balanced Boron/Epoxy Single Lap Joints Subjected to Corrosive Environmental Conditions<br><br>*P. Charitidis, G.C. Papanicolaou, E. Karachalios, G. Jiga, D.V. Portan* |

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| 14:40 pm - 15:00 pm | **13.3** Simulation of Bird Strikes on CFRP Plates as a Part of a Validation Process<br><br>*S. Arslan, Ath. Dafnis, K.-U. Schröder* | **14.3** Application of AE for the condition monitoring of technical objects<br><br>*I. Baran, M. Nowak* | **15.3** Durability Analysis and Creep-Fatigue Interactions in Composites due to Accelerated Aging<br><br>*S. P. Zaoutsos, D.E. Mouzakis* |
| 15:00 pm - 15:20 pm | **13.4** Damage prediction model for composite laminates subjected to low velocity impact<br><br>*LI Nian, Chen Puhui* | **14.4** NDT and mechanical properties characterization of bulk and porous glass ceramics<br><br>*S. Maropoulos, S. Ganatsios, S. Papanikolaou* | **15.4** Experimental and Numerical Analysis of Unbalanced Boron/Epoxy-Aluminum Single Lap Joints Subjected to a Corrosive Environment<br><br>*P.J. Charitidis, G.C. Papanicolaou, D.E. Mouzakis, G. Jiga* |
| 15:20pm - 16:20pm | Poster Exhibition - Coffee break | | |
| 16:20 pm - 18:00 pm | **SESSION 16 (LALARIA)**<br>**Biomaterials properties & applications**<br>(Chairmen: N. Michailidis & Al. Tsouknidas) | **SESSION 17 (KEHRIA)**<br>**Computational Mechanics & Analytical Methods**<br>(Chairman: K. Tserpes) | **SESSION 18 (MARATHA)**<br>**Novel Engineering Approaches**<br>(Chairman: Al. Kermanidis) |
| 16:20 pm - 16:40 pm | **16.1** The effect of porosity on the pseudoelasticity of NiTi Shape Memory Foams<br><br>*B. Lester, A. Tsouknidas, G. Maliaris, T. Baxevanis, D. Lagoudas, N. Michailidis* | **17.1** Adiabatic shear band formation in orthogonal machining of Ti6Al4V<br><br>*Ap. Korlos, O. Friderikos, C. David, G. Mansour, D. Sagris, I. Tsiafis, Th. Kosmanis* | **18.1** Prediction of surface roughness in manufacturing processes considering cutting parameters: A hardened steel case study<br><br>*I. Mirisidis, S. Karagiannis, Th. Ispoglou, J. Kechagias* |
| 16:40 pm - 17:00 pm | **16.2** Construction of silicon rubber lungs by means of aluminum dies for simulating respiratory in a phantom<br><br>*A. Lontos, Y. Parpottas, I. Chrysanthou* | **17.2** Modeling of Epoxy Silica Particle Nanocomposites Assisted by the Voronoi Tesselation Technique<br><br>*N. Papas, D. Tzetzis, G. Mansour* | **18.2** Response of circular simply supported GLARE fiber-metal laminated plates under indentation loading and unloading<br><br>*G. Bikakis, A. Savaidis* |

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| 17:00 pm - 17:20 pm | **16.3** Mechanical and fracture behaviour of cellular materials with regular and random lattice structures under various compressive velocities<br><br>*G. Maliaris* | **17.3** Analytical - Experimental Determination of Dynamic Behaviour of Epoxy Aramid-Carbon Fiber Hybrid composites Reinforced with Silica Nanoparticles<br><br>*G. Mansour, K. Tsongas, D. Tzetzis* | **18.3** Nano- and microscale fatigue analysis of biomimetic, nacre-based hard coatings on polymer composite substrates after tribological testing<br><br>*J. Lackner, W. Waldhauser, A. Mzyk, L. Major, M. Kot* |
| 17:20 pm - 17:40 pm | **16.4** Nature's way of engineering against fracture<br><br>*T. Mitsiadis, A. Tsouknidas, N. Michailidis* | **17.4** Crack failure problems in dipolar gradient elastic materials and applications to textiles used in vascular surgery<br><br>*I. D. Gavardinas, A. E. Giannakopoulos, A. Athanasoulas, N. Rousas, A. D. Giannoukas* | **18.4** Applications of 3D optical topography to failure analysis of metallic components<br><br>*E. Ollivier, T. Bize, T. Martin* |
| 17:40 pm - 18:00 pm | **16.5** Lumbar stability and risk factors involved in uni- and bi-lateral partial facetectomy<br><br>*S. Ahuja, A. Tsouknidas, S. Sarigiannidis, N. Michailidis* | **17.5** Dynamic deep hole drilling on CNC milling machines<br><br>*S. Omirou, M. Fyrillas, A. Lontos* | **18.5** Fast Damaging Processes in TaN Thin Film Absorbers under Action of Nanosecond Electrical Pulses<br><br>*L. Ardaravicius, S. Kersulis, O. Kiprijanovic, C. Simkevicius, B. Vengalis* |
| 18:00 pm | End of Day 2 | | |
| 20:30 pm | Official Dinner | | |

**FRIDAY, June 26, 2015**

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| 9:00 am - 16:00 pm | Registration | | |
| **9:00 am - 9:30 am** | **Keynote Lecture: Prof. V. Tucci,** Modeling and electrical characterization of polymeric nanocomposites (NPC) for sensors and energy harvesting applications | | |
| **9:30 am - 11:30 am** | **SESSION 19 (LALARIA)**<br>**Recent developments in studies on cracks and notches: criteria for fracture and fatigue assessment (I)**<br>(Chairman: F. Berto) | **SESSION 20 (KEHRIA)**<br>**Characterization of failure (II)**<br>(Chairman: H. Atapek) | **SESSION 21 (MARATHA)**<br>**Non-destructive evaluation of composites**<br>(Chairman: Al. Paipetis) |
| 9:30 am - 9:50 am | **19.1** On Ensuring Structural Integrity in the Presence of Stress Singularities<br><br>*G.B. Sinclair*<br><br>*Invited lecture (30min)* | **20.1** Erosive Wear Of Volcanic Ash Reinforced Polyphenylene Sulfide Composites<br><br>*Sinan Fidan, Onur Coban, Ozgur Bora, Tamer Sinmazcelik* | **21.1** Studying the stress transfer at the interface of hierarchical composites<br><br>*K. Tsirka, M. Skouras, A. Paipetis* |
| 9:50 am - 10:10 am | | **20.2** The Effect of Heat Treatment on Tribological Behaviour of AISI 52100 Steels under Dry Sliding Condition<br><br>*Enbiya Türedi* | **21.2** Monitoring the self-healing ability of a thermo-reversible Diels Alder reaction by Raman spectroscopy<br><br>*K. Tsirka, D. Bekas, H. Fischer, D. Turkenburg, A. Paipetis* |
| 10:10 am - 10:30 am | **19.2** The strain energy density approach applied to cyclic and transient thermo-mechanical problems<br><br>*P. Ferro, M. Zappalorto* | **20.3** Tribological characterization of cast alloys used as rolling mill rolls<br><br>*Hakan Atapek, Hakan Alkan* | **21.3** Monitoring of curing of epoxy resin via Ultrasonics and Impedance Spectroscopy<br><br>*A. Garavela, G. Foteinidis, A. Paipetis* |
| 10:30 am - 10:50 am | **19.3** Multiscale Fatigue Crack Growth Model for Metal Alloys: An Energy Density Approach<br><br>*K. K. Tang, H. Wu* | **20.4** Wear behaviour of hard thin film coated DIN 1.2367 steels used as die materials<br><br>*Gülşah Aktas, Seyda Polat, Hakan Atapek* | 21.4 Using impedance spectroscopy for CNTs dispersion monitoring in dielectric media<br><br>*G. Foteinidis, P. Alafogianni, N.M. Barkoula, T.E. Matikas, A.S. Paipetis* |

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| 10:50 am - 11:10 am | **19.4** The peak stress method to summarise the fatigue behaviour of fillet-welded steel joints subjected to axial or bending loading<br><br>*G. Meneghetti, V. Babini, D. Marini* | **20.5** An investigation on the fatigue behaviour of Cu-2.55Ni-0.55Si alloy<br><br>*H. Atapek, S. Pantelakis, Ş. Polat, A. Chamos, G. Aktas* | **21.5** Real time monitoring and evaluate of the self-healing process via the employment of Non-destructive evaluation techniques<br><br>*D.G. Bekas, K. Tsirka, D. Baltzis, A.S. Paipetis* |
| 11:10 am - 11:30 am | **19.5** A frequency domain HCF criterion to biaxial random loading<br><br>*S. Vantadori, A. Carpinteri, C. Ronchei, D. Scorza* | **20.6** Wear behaviour of aged DIN 1.4462 duplex stainless steels<br><br>*Alptekin Kısasöz, Ş. Hakan Atapek, Ahmet Karaaslan* | **21.6** Impedance spectroscopy as a method to characterize damage initiation and progression in glass fiber reinforced polymers<br><br>*D.G. Bekas, V. Melios, A.S. Paipetis* |
| 11:30 am - 11:45 am | Coffee Break | | |
| **11:45 am - 13:45 pm** | **SESSION 22 (LALARIA)**<br>**Recent developments in studies on cracks and notches: criteria for fracture and fatigue assessment (II)**<br>(Chairman: F. Berto) | **SESSION 23 (KEHRIA)**<br>**Damage Strain Monitoring**<br>(Chairman: R. Ruzek) | **SESSION 24 (MARATHA)**<br>**Planar thin wall nanostructural sheet composite materials for technical applications**<br>(Chairman: L. Lapcik) |
| 11:45 am - 12:05 pm | **22.1** Friction Hydro-pillar Processing Refurbishment of Steam Turbine Blade/Disc Attachment Holes<br><br>*D. Hattingh, N. James, M. Newby, R. Scheepers, P. Doubell*<br><br>*Invited lecture (30min)* | **23.1** Test and numerical assessment of fuel tank damage<br><br>*Radek Doubrava, Lucie Novakova* | **24.1** A density functional study of magnetism in nanofibred Fe-Pd and Fe-Pt systems<br><br>*M. Zouhar, M. Sob* |
| 12:05 pm - 12:25 pm | | **23.2** Effect of Particles Size on Mechanical Properties of Polypropylene Particulate Composites<br><br>*E. Nezbedova, F. Krcma, L. Pospísil, P. Hutar* | **24.2** Effect of Nanoparticular Inorganic Filler on Properties of Cellulose Fibres Based Planar Thin Wall Nanostructural Sheet Composite Materials<br><br>*L. Lapcik, B. Lapcikova* |
| 12:25 pm - 12:45 pm | **22.2** Analysis of U-notched grey cast iron specimens subjected to mode I loading through the Cohesive Zone Model<br><br>*D. Cendon, M. Elices* | **23.3** Evaluation of the laboratory fatigue test and the fatigue behaviour of an innovated metal aircraft principal structure element<br>*V. Horak, M. Oberthor, J. Sedek, J. Raska* | **24.3** Fire Retardant Inorganic Filler Synthetic Polymer Composite Materials<br><br>*B. Lapcikova, L. Lapcik* |

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| | **22.3** Some considerations on the J-Integral applied under elastic-plastic conditions<br><br>*P. Gallo, F. Berto* | | |
| 12:45 pm - 13:45 pm | Lunch Break | | |
| **13:45 am - 14:45 pm** | **SESSION 25 (LALARIA)**<br>**Recent developments in studies on cracks and notches: criteria for fracture and fatigue assessment (III)**<br>(Chairman: F. Berto) | **SESSION 26 (KEHRIA)**<br>**Failure analysis**<br>(Chairman: S. Papaefthymiou) | |
| 13:45 pm - 14:05 pm | **25.1** Structural levels of fatigue failure of heat-resistant 12Cr1MoV steel modified by vacuum arc Zr+ ion beam irradiation, ultrasonic straining and electron beam treatment<br><br>*S. V. Panin, I. V. Vlasov, V. P. Sergeev, Y. I. Pochivalov, A. I. Ziganshin, P. O. Maruschak* | **26.1** Effect of Sliding Friction on Spline Surface Failure under misaligned condition in Aero Engines<br><br>*G. Narayanan, K. Rezaei* | |
| 14:05 pm - 14:25 pm | **25.2** The Effectiveness of Corrugation as a Crack Stopper in Composite Bonded Joints<br><br>*K.I. Tserpes, G. Peikert, I. Floros* | **26.2** Typical defects in plate and long steel products<br><br>*S. Papaefthymiou, F. Tzevelekou, A. Antonopoulos, A. Gypakis* | |
| 14:25 pm - 14:45 pm | **25.3** Recent advances in the three-dimensional stress fields analysis of elastic and elastic-plastic notched plates<br><br>*M. Zappalorto, F. Berto* | **26.3** Failure Analysis of a Fractured Aluminium Extrusion Structural Component in an Aircraft Wing<br><br>*K. Stamoulis, D. I. Panagiotopoulos, G. A. Pantazopoulos and S. Papaefthymiou* | |

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| 14:45 pm - 15:05 pm | **25.4** Failure of metallic foams under different loading conditions<br><br>*L. Marsavina, J. Kovacik, T. Voiconi, E. Linul, T. Sadowski, M. Knec* | **26.4** Fracture failure analysis of turbojet engine turbine blades<br><br>J. Spyroglou, A. Koutsomichalis, J. Kourmpetis, C. Katsari, N. Vaxevanidis | |
| **15:15 pm - 16:35 pm** | **SESSION 28 (LALARIA)**<br>Experimental Approaches I<br>(Chairman: R. Konecna) | **SESSION 29 (KEHRIA)**<br>Experimental Approaches II<br>(Chairman: Chr. Katsiropoulos) | |
| 15:15 pm - 15:35 pm | **28.1** Tensile and Fatigue Behavior of Ti6Al4V Produced by Selective Laser Melting<br><br>*Gianni Nicoletto, Radomila Konecna, Ludvik Kunz, A. Baca* | **29.1** Investigation of Mechanical Properties of Aramid Fibre Reinforced Polypropylene Composite<br><br>*Aylin Bekem, Mustafa Dogu, Ahmat Unal* | |
| 15:35 pm - 15:55 pm | **28.2** Estimation of local properties in welded joints using samples with simulated microstructure<br><br>*P. Kucharczyk, S. Muenstermann* | **29.2** The Effects of Recycling on Polyolefin Matrix Composites<br><br>*Ahmet Unal, Aylin Bekem, Ali Rifat Unal* | |
| 15:55 pm - 16:15 pm | **28.3** Mechanical Properties Improvement of AISI 3115 Steel through Carburizing and Hardening<br><br>*D.G. Papageorgiou, D.Katsaros, M. Koukouli, C. Medrea* | **29.3** Improvements of creep properties for magnesium alloys<br><br>*Y. Huang, H. Dieringa, K. U. Kainer, N. Hort* | |
| 16:15 pm - 16:35 pm | **28.4** Damage mechanisms of ferritic steel sheets subjected to cyclic loadings in starter-alternator<br><br>C. Schayes, J-B. Vogt, J. Bouquerel, F. Palleschi | **29.4** Fretting fatigue life prediction of a mono contact Steel/Aluminum at variable amplitude<br><br>*A. Belloula, A. Amrouche, M. Nait-Abdelaziz* | |
| **16:35 pm** | **End of Conference** | | |

# POSTER EXHIBITION

| A/A | Title |
|---|---|
| 1 | **Structural Integrity Aspects of a Lightweight Civil Unmanned Air Vehicle**, *E. Giannakis, N. Pitatzis, G. Savaidis* |
| 2 | **Design and durability testing of leaf springs,** *G. Savaidis, A. Mihailidis, C. Salpistis, M. Malikoutsakis* |
| 3 | **Three Dimensional Effects at the Tip of Rounded Notches under Cyclic Plasticity,** *C. Marangon, A. Campagnolo, F. Berto* |
| 4 | **V-notches in hyperelastic materials,** *F. Berto* |
| 5 | **The effect Of Nozzle Geometry On Erosive Wear Behavior Of Polymethyl Methacrylate,** *B. Onen, S. Fidan, A. Cinar, T. Sinmazcelik* |
| 6 | **Surface degradation behaviour of nano oxide reinforced Zn composite coatings in 3.5 % NaCl solution,** *U. Erten, I. Unal, S. Zor, H. Atapek* |
| 7 | **Manufacturing of Self-Healing Carbon Fiber Reinforced Composites for structural aerospace applications,** *M. Raimondo, Nicola, Volponi, Binder, Michael, L. Guadagno* |
| 8 | **Thermal and Spectroscopy Characterization of Aeronautical Epoxy Composites filled with Carbonaceous Nanoparticles,** *M. Raimondo, L. Guadagno, C. Naddeo, L. Vertuccio, K. Lafdi* |
| 9 | **Incorporation of $ZrO_2$ and $CB_4$ fillers into polymer matrices for enhancing the hydrophobic behaviour,** *V. Bugatti, L. Vertuccio, L. Osseo, A. Sorrentino, S. Russo, V. Vittoria, L. Guadagno* |

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| 10 | **Strain-dependent Electrical and Mechanical Properties of Carbon Nano Tubes-Loaded Epoxy Resin,** *P. Lamberti, B. De Vivo, R. Raimo, G. Spinelli, V. Tucci, L. Vertuccio* |
| 11 | **Influence of manufacturing processes on the morphological arrangement of CNTs in nanofilled Carbon Fiber Reinforced Composites,** *G. Barra, U. Vietri, M.Raimondo, L. Vertuccio, F. De Nicola, R. Volponi, L. Guadagno* |
| 12 | **Lightning Strikes Simulation on Carbon Fibers Panels to Assist Aircraft Design,** *P.Lamberti, B. De Vivo, L.Egiziano, G.Spinelli, V.Tucci* |
| 13 | **Evaluation of the electrical aging of epoxy-based nanocomposites for motor insulation,** *B.De Vivo, P.Lamberti, R.Raimo, V.Tucci, L.Vertuccio, L.Beneduce* |
| 14 | **Simulation of cyclic transformations in a 0.2C - 5Mn steel,** *P.I. Sarafoglou, M. Tzini, G.N. Haidemenopoulos* |
| 15 | **Air hardened ductile forging steels with medium manganese content,** *A. Stieben , W. Bleck* |
| 16 | **Lignin as new precursors for the development of carbon fibers: co-blends and extrusion,** *S. Anagnou, E. Milioni, C. Mpalias, I.A. Kartsonakis, E.P. Koumoulos, C.A. Charitidis* |
| 17 | **Nanomechanical and nanotribological properties of Epoxy based composites reinforced with carbon fibers,** *D. Dragatogiannis, D. Soulioti, C. Charitidis* |
| 18 | **Determination of stress-strain curves of friction stir welded joints by FEM and nanoindentation reverse analysis,** *D. Dragatogiannis, S. Skiadas, C. Charitidis* |
| 19 | **Chloride nanotraps based on Mg-Al-$CO_3$ layered double hydroxides,** E.K.Karaxi, V. Chaleplis, I.A. Kartsonakis, C.A. Charitidis |
| 20 | **Rapid prototyping of bio-compatible composite scaffolds,** *N. Michailidis, A. Tsouknidas, M. Pantazopoulos, E. Smyrnaios* |

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| 21 | **Life Cycle Analysis of bulk and porous fly ash glass ceramics,** *D. Tsipas, N. Michailidis, A. Tsouknidas, S. Maropoulos, S. Ganatsios* |
| 22 | **Investigation of Tensile Failure of Defective Single Walled Carbon Nanotubes,** *D. Yazdani, S.Y. Ahmadi Brooghani* |
| 23 | **Mechanical stability of cubic crystals under hydrostatic and uniaxial loading,** *P. Rehak, M. Cerny, M. Sob* |
| 24 | **To increase fatigue strength of grey iron by shot peening,** *B. Kaouache, D. Backstrom, M. Ahmad, T. Vuoristo, S. Johansson, R. L. Peng* |
| 25 | **Towards nanostructured AA6063 alloy in equal channel Angular extrusion by engineering the initial microstructure,** *S.F. Razavi* |
| 26 | **A cost and quality assessment of a new adhesive bonding process for composite materials,** *Ch.V. Katsiropoulos, Sp.G. Pantelakis* |
| 27 | **Cutting forces prediction and thermal distribution considering various cutting parameters and wear progression in drilling,** *I. Mirisidis* |
| 28 | **Evaluation of SCC of two AZ wrought magnesium alloys,** *A. N. Chamos, A. D. Zervaki, G. N. Haidemenopoulos, S. G. Pantelakis* |
| 29 | **Corrosion effects on the mechanical performance of protruding steel bars from concrete structures,** *A. Drakakaki, A. Apostolopoulos, G. Diamantogiannis, C. Apostolopoulos* |
| 30 | **First failure of circular clamped GLARE fiber-metal laminated plates under indentation loading,** *G. S.E. Bikakis, A. Savaidis* |

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| 31 | **Root cause analysis of an early fatigue failure of a boron flat steel component designed for heavy duty structural applications,** *S. Papaefthymiou, A. Vazdirvanidis, G. Pantazopoulos, C. Goulas* |
| 32 | **Failure Anlaysis of a Cutting Tool Used in a Bridge Slot Filterpipe Machine,** *C. Medrea, G. Manolas, D.G. Papageorgiou* |
| 33 | **Analysis and Redesign of a Helical Coil Compression Spring used for Aircraft Brake Piston Retention,** *D.I. Panagiotopoulos, K. Stamooulis* |
| 34 | **Freeze/thaw and wet/dry durability of CNTs modified mortars,** *P. Alafogianni, I. Tragazikis, T. E. Matikas, N.-M. Barkoula* |
| 35 | **Electrical sensing of nano-modified cement mortars,** *P.T. Dalla, P. Alafogianni, I. Tragazikis, D. Exarchos, K. Dassios, N.-M. Barkoula, T. E. Matikas* |
| 36 | **Mechanical behavior of cement-based nanocomposites under bending,** *I.K. Tragazikis, P. Dalla, D. Exarchos, K. Dassios, T.E. Matikas* |
| 37 | **Organic-inorganic epoxy hybrid materials as potential matrix for fiber reinforced composites: study of the structure - properties relationship,** *M. Lavorgna, F. Piscitelli, GG. Buonocore, F. Tescione, L. Verdolotti, L. Mascia* |
| 38 | **Comparative study of Al – based ceramic particulate reinforced composite materials: Sliding wear and aqueous corrosion assessment,** *H. Mavros, A.E. Karantzalis, A. Lekatou* |

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